

G PEM/NJ/Vacu2

PCT/NL99/00689

CLAIMS

(75)

1. Apparatus for applying at least one coating to objects by means of vapour deposition (PVD) under vacuum, comprising:

- a PVD device for coating the object under a vacuum;
- at least one lock separating the PVD-device from the ambient;
- a transport device which extends through the PVD-device and into the lock;
- wherein the transport device is adapted to transport objects arranged on carriers, and
- the PVD device is adapted for semi-continuous treatment of objects arranged on the carriers, characterized in that the apparatus comprises:
 - a preprocessing device for performing a preprocessing on the object;
 - a postprocessing device for postprocessing the objects;
- and that the transport device extends through said at least one lock, the preprocessing device and the postprocessing device.

2. Apparatus as claimed in claim 1, characterized in that the carriers are elongate, that object holders are present on the carriers, the object holders are rotatable and the transport device is adapted to move the carriers substantially in the longitudinal direction and to rotate the object holders in the PVD-device.

3. Apparatus as claimed in claim 2, characterized in that the PVD device is connected to the ambient by means of a single lock, the transport device extends through the lock and the lock is adapted to feed a carrier simultaneously into and out of the PVD device.

4. Apparatus as claimed in claim 3,
characterized in that the transport device has a closed
configuration and extends in two directions through the
PVD device.

5 5. Apparatus as claimed in claim 4,
characterized in that a buffer for the carriers is
arranged between the preprocessing device and the PVD
device.

6. Apparatus as claimed in claim 5,
10 characterized in that a buffer for the carriers is
arranged between the PVD device and the postprocessing
device.

7. Apparatus as claimed in claim 5 or 6,
characterized in that the buffers are adapted to move the
15 carriers in transverse direction.

8. Apparatus as claimed in any of the foregoing
claims, characterized in that the preprocessing device
comprises a blower device for blowing dust from the
objects for treating.

20 9. Apparatus as claimed in any of the foregoing
claims, characterized in that the preprocessing device
comprises an application device for applying onto the
objects for treating a lacquer which cures with
radiation, for instance UV or IR radiation, and a device
25 for irradiating the lacquered objects with the relevant
radiation.

10. Apparatus as claimed in claim 9,
characterized in that the preprocessing device comprises
a surface processing device connected prior to the
30 application device for processing the surface of the
objects for treating.

11. Apparatus as claimed in any of the
foregoing claims, characterized in that the
postprocessing device comprises an application device for
35 applying onto the objects for treating a lacquer which
cures with radiation, for instance UV radiation, and a

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device for irradiating the lacquered objects with the relevant radiation.

12. Apparatus as claimed in any of the foregoing claims, characterized in that a loading/unloading station is placed between the postprocessing device and the preprocessing device for unloading processed objects and loading objects for processing.

13. Carrier for use in an apparatus as claimed in any of the foregoing claims, characterized in that the object holders are interchangeable object holders.

14. Carrier as claimed in claim 13, characterized in that the object holders are placed on vertically extending shafts mounted rotatably in the carriers.

15. Carrier as claimed in claim 14, characterized in that toothed wheels are arranged on the shafts for driving the shafts in rotation.

16. Carrier as claimed in claim 15, characterized in that the toothed wheels are arranged under the top side of the carrier.

17. Carrier as claimed in claim 16, characterized in that the toothed wheels are let into openings arranged in the carrier and the toothed wheels protrude outside the side walls of the carrier.

18. Apparatus as claimed in any of the claims 1-12, suitable for carriers as claimed in any of the claims 13-17, characterized in that the apparatus is provided with cams for engaging in and rotating the toothed wheels during passage of the carriers.

19. Apparatus as claimed in claim 18, characterized in that the cams form part of a drivable chain for causing the shafts to rotate independently of the linear movement of the carrier.

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